

GEOGRAPHIC NEWS BULLETINS

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THE NATIONAL GEOGRAPHIC SOCIETY

(The National Geographic Society is a scientific and educational Society, wholly altruistic, incorporated under the Federal law as a non-commercial institution for the increase of geographic knowledge and its popular diffusion.)

General Headquarters, Washington, D. C.



Contents for Week of March 25, 1935. Vol. XIV. No. 6.

1. Crete, Focus of Greek Revolt.
2. How Science "Undresses" Fish with Chemicals.
3. Bangkok, Siam's Capital, Awaits a New Monarch.
4. New Glacier and Mountains Added to Map by Washburn Expedition.
5. London Exhibition Halls Mirror English Trade.



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SIAMESE KINGS MAY COME AND GO BUT THE RICE MILL THUMPS ON

In rural areas and back in the mountains of Siam primitive husking devices, such as that shown above, are still in use. The woman at the left, pushing down with her foot on the short end of the lever, raises the pestle. Falling into the rice-filled hollow log, it husks and polishes the grain. The girl in the center winnows the rice by tossing it up and down on a bamboo tray (see Bulletin No. 3).

HOW TEACHERS MAY OBTAIN THE BULLETINS

The Geographic News Bulletins are published weekly throughout the school year (thirty issues) and will be mailed to teachers for one year upon receipt of 25 cents (in stamps or money order). Entered as second-class matter, January 27, 1922, at the Post Office at Washington, D. C., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized February 9, 1922.

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Crete, Focus of Greek Revolt

GREEK warships, manned by rebels, dodging among the islands of the Aegean, have focused interest on Greece and its island-studded seas. The seized ships were bound for Crete, focus and starting place of the recent uprising.

Crete, as a disturbing element in the affairs of the Mediterranean, is nothing new to historians. Nor is this the first revolt in which the island has taken a leading rôle.

Crete was annexed to modern Greece in 1912. The Cretans had been in an almost constant state of revolt against Turkish and Egyptian rule for the greater part of the nineteenth and the early part of the twentieth centuries. Four years under Greek rule had hardly passed before the islanders staged another lively revolution.

Only Three Miles of Railroad

Lying in the Mediterranean about equidistant from Europe, Asia, and Africa, Crete is a roughly oval-shaped mass of mountain with fewer inhabitants than Indianapolis, Indiana. For more than 3,000 years it has played an important part in Mediterranean affairs, yet it lacks the modern development of the West. A traveler could traverse its 160-mile length in a few hours by railroad or paved highway—if there were railroads and good highways. But there is only one railroad, and that is but three miles long.

Good roads are being slowly extended, however, and automobiles are becoming more numerous. But throughout most of the island mules and donkeys are the chief transport as they were centuries ago.

Stumbling and slipping on the trails of Crete, travelers often come suddenly upon small commercial towns many miles from the Mediterranean shores. They were built in these inland locations when the sea was infested with pirates.

Crete has two important modern towns, both on the north coast—Canea, the capital, with 26,000 inhabitants, and Candia, with a population of nearly 35,000. Candia's pleasant suburbs extend far beyond the old fortified walls that once encircled its flat-topped, white buildings.

Domenico Theotocopuli, better known to the world as the painter "El Greco," was born in Candia in 1542.

Olives, Citrons, Raisins and Tobacco

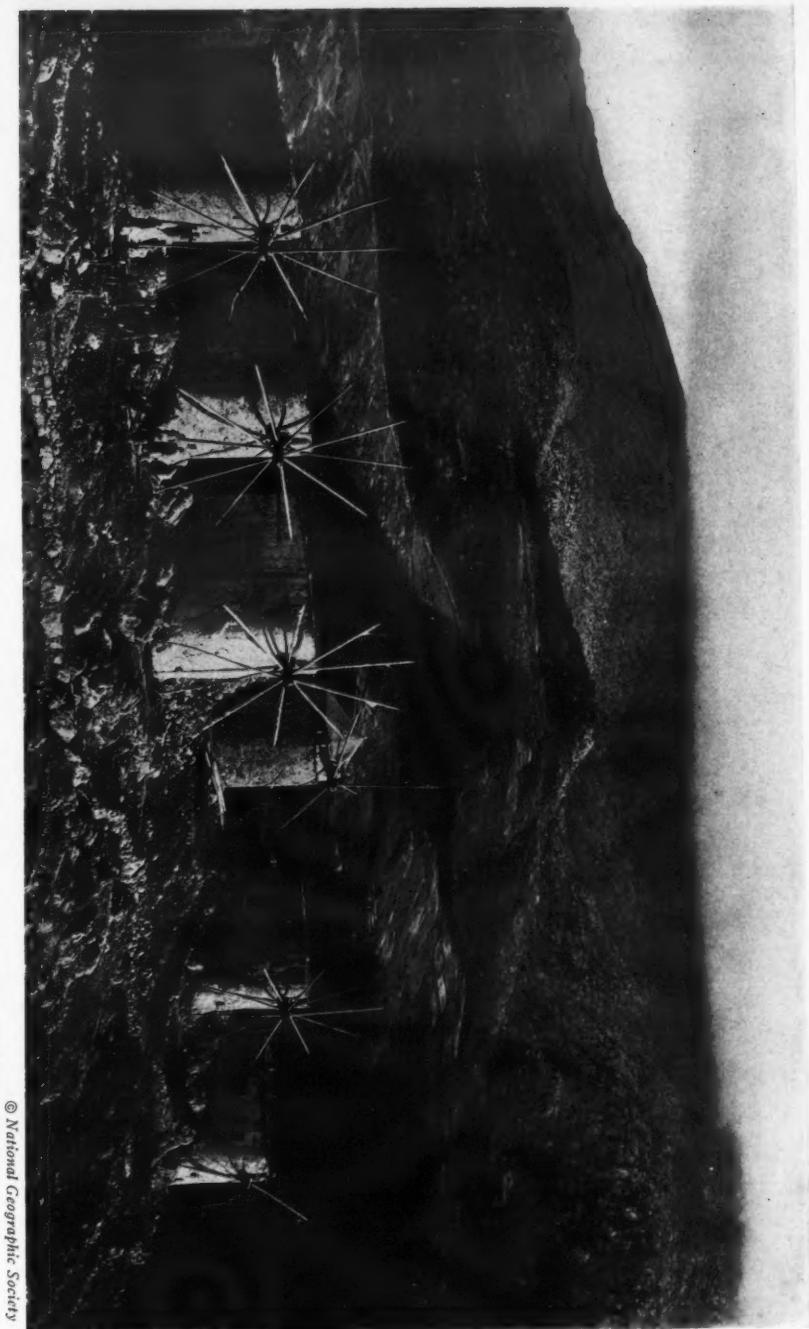
The southern coast of the island has few safe anchorages. Most of the trade is handled by sailing craft and motor boats. Large ships cannot approach the wharves of the small harbors, but are obliged to anchor some distance from shore. By means of cranes, merchandise is unloaded into small boats which approach the beach as closely as possible. There almost naked men, standing in water up to their shoulders and with heavy pads on their heads, seize parcels of cargo and carry them ashore.

Olives, olive oil, citrons (see illustration, next page), raisins, and tobacco are important products of Crete. Clumps of olive trees appear on the lowlands as well as on the mountainsides. One of the most famous products of the island is the dictam or dittany, a plant growing on Mount Dicte. In the Middle Ages almost miraculous cures were ascribed to it.

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CRETAN WINDMILLS TAKE TOLL FROM THE GALES WHICH SWEEP THROUGH MOUNTAIN PASSES

Unlike those of the Netherlands, however, the windmills of Crete can operate only when the wind blows from one direction. Fortunately, the breeze usually comes from one point of the compass, and then the mills unfold their white wings over wooden framework to grind the grain which has been brought up from the plains on the backs of donkeys (see Bulletin No. 1).



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How Science "Undresses" Fish with Chemicals

TO MANY people a fish bone is merely something to be kept out of one's throat during the course between soup and meat. But fish bones tell stories to scientists; and study of the structure and arrangement of different species helps to piece together the long story of evolution.

The Department of Tropical Research of the New York Zoological Society, under the direction of Dr. William Beebe, noted explorer and naturalist, is studying scores of different kinds of fish by a new process wherein chemicals almost literally "undress" the specimen, leaving every bone as visible as in an X-ray photograph.

The fish specimens were secured in Bermuda waters off New Nonsuch (near St. George's) last summer, and the studies are being made at the winter headquarters of the Department of Tropical Research in New York.

Every Bone Tinted Scarlet

After a fish specimen caught in deep sea nets, or in hauls near shore, has been identified and examined, it is turned over to Miss Gloria Hollister, research associate of the Department of Tropical Research, who makes what is technically known as a "transparency" of it by soaking the entire fish in solutions of potassium hydroxide. This procedure is followed by immersion in alizarin dyes. The latter colors every bone, no matter how tiny, a brilliant scarlet. Then follow chemical baths which bleach the skin and remove the dye from tissues other than bone.

Finally, the finished transparency is hung by threads in a glass slender dish, or exhibition jar, filled with a preservative solution, so that the fish's "internal architecture" may be studied, sketched or photographed. The entire fish is there, but its own mother would never recognize it, or perhaps would swim in alarm away from so startling a sight! One may see readily through the mass of flesh and cartilage and study every bit of bone, each in its natural position.

Once it was necessary to cut away the flesh to study the structure of fishes; but this process, no matter how carefully it was done, often resulted in severed bones, or, where bones were imbedded in the flesh and not connected with vertebrae or other bits of the framework, they were missed entirely.

Unmasking the Gulper Eel

X-ray photographs are not always satisfactory because tiny bones or masses of flesh often result in blurred prints, and detail of structure is lacking. Besides, X-ray photographs must be taken from several different angles, but transparencies reveal these angles and more by simply turning the specimen around.

The importance of being able to study fish in this form may be readily recognized by noting some of the startling facts which the "undressing" process reveals. In some of the deep sea fishes there are gaps in the backbone just back of the head. This gap permits the jaws with enormous teeth to open to an extraordinary degree, enabling the fish to swallow other creatures larger than itself.

Hideous, black gulper eels from abyssal depths are unmasked in their true, almost headless forms. Suspended from a tiny skull is the outline of its cavernous, sacklike mouth. Aside from a small stomach, nothing else shows but a whiplike tail which it uses to push its great mouth forward.

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Crete came under the domination of Rome in 66 B. C. When the Roman Empire was divided it was given to eastern rulers. It remained under the Byzantine emperors until 823, when it was captured by piratical Saracens from Andalusia, who held sway over the island for 140 years. The Byzantines later redeemed it. The Venetians bought it in 1204 and ruled there for more than 400 years.

Crete was probably the seed bed for the culture which later flowered into the Hellenic civilization of Greece and Asia Minor. Archeologists have uncovered in the island evidences that civilization flourished in Crete as early as the first dynasties of Egypt (3400-2800 B. C.).

Note: See also "The Perennial Geographer (Vergil)," *National Geographic Magazine*, October, 1930; "Cruising to Crete," February, 1929; "From London to Australia by Aeroplane," March, 1921; and "The Sea-Kings of Crete," January, 1912.

Bulletin No. 1, March 25, 1935.



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PACKING A FRUIT CAKE INGREDIENT

Crete grows and exports large numbers of citrons. After the big green fruit has been soaked in sea water for several weeks it is sorted by size and condition before being shipped from Candia to the United States and Italy.

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Bangkok, Siam's Capital, Awaits a New Monarch

CRANLEIGH, a little village in Surrey, England, and Bangkok, the teeming capital of the oriental kingdom of Siam, do not seem to have much in common. Yet early this month cable dispatches linked these two places, half a world apart.

In Cranleigh, King Prajadhipok, ruler of Siam, signed his name to a paper which ended his reign as monarch of one of the very few remaining independent nations in Asia. In Bangkok this important, but not unexpected, news was received calmly, although the Siamese capital was tense with suppressed excitement.

As a capital, Bangkok is not old. The new Rama I bridge, its enormous spans etched sharply against a background of gaudy temples and waterfront shops, gives the city a date line. This 475-foot structure, first to link the two portions of the city, was dedicated in April, 1932, on the 150th anniversary of the founding of Bangkok and the reign of the present Chakkri dynasty.

River Was Long Its "Main Street"

In the 153 years, Bangkok has seen many changes. Up and down beyond the palaces and across the river the city has expanded; to-day it houses almost 550,000 people. Well within the last half century, however, the Me Nam River, leading commercial artery of the country, was still Bangkok's main street, and a system of canals formed its cross streets (see illustration, next page).

"Venice of the Orient," people called the city then. Many of the older buildings continue to face the river, rather than the network of roads that has been cut through the ever-growing city. Most of the floating houses, once a feature along the river banks and canals, now have disappeared, and in their stead are numerous two- and three-story buildings lining the streets and alleys.

New Road, the city's main thoroughfare, is an inelegant thing by day. All manner of buildings, from sun- and rain-warped, open-front wooden shops to modern concrete structures, cluster along this narrow avenue of commerce. For miles the road seems to wander aimlessly on, bending first one way and then the other, paralleling the sinuous course of the river. Far too narrow for all the jinrikishas, trucks, automobiles, hand-drawn carts and tides of humanity that surge into it, the street is congested even more by tramcar lines.

Has Large Chinese Population

One is impressed by the number of Chinese shops and the throngs of Chinese people that are everywhere in the Siamese capital. On side streets one can step into veritable Chinatowns. Elsewhere one finds miniature Indias centered about the silk goods, gem and curio trade.

As the visitor becomes more intimately acquainted with Siam, the reason for this foreign population becomes obvious. For centuries the Siamese have shown little desire to enter business and trade, and have left it in the hands of outland people. More than 80 per cent of the Siamese are farmers, and the majority of the others are directly or indirectly connected with the government service. Only slightly more than 2 per cent are engaged in industrial pursuits.

Several European business houses, marketing an incredible variety of goods, do a thriving trade in cosmopolitan Bangkok. There are, however, quite a few Siamese stores, some large, many small. Of the latter, the womenfolk often act

Another fish from the depths—the deep sea puffer—does not seem very interesting when it is brought to the surface, but its transparency discloses that it is mostly one enormously developed head, with a brief vertebral column.

The triggerfish's transparency reveals the origin of its name—an interlocking spinal joint that operates like the trigger on a gun. The rare, deep sea fish called *Opisthoproctus* has an interesting skeleton which could never be satisfactorily studied until it had been treated by the process. With its flesh made transparent it was found that it was designed very much like a sea-sled, with a solid flat bottom skid.

Note: Students interested in deep-sea and other underwater forms of life should also consult "A Half Mile Down," *National Geographic Magazine*, December, 1934; "Coral Castle Builders of Tropic Seas," June, 1934; "A Wonderer under Sea," December, 1932; "Depths of the Sea," January, 1932; and "Round Trip to Davy Jones's Locker," June, 1931.

Bulletin No. 2, March 25, 1935.

MINNESOTA ADDED TO STATE SERIES

The latest addition to the series of American State and city articles being published by the *National Geographic Magazine* is "Minnesota, Mother of Lakes and Rivers," in the March, 1935, issue. Others that have appeared in this series recently:

Southern California—November, 1934
Eastern National Parks—June, 1934
Great Lakes—April, 1934
Oregon—February, 1934
New York State—November, 1933
New Jersey—May, 1933
Washington State—February, 1933
Philadelphia—December, 1932

Colorado—July, 1932
Ohio—May, 1932
San Francisco—April, 1932
Alabama—December, 1931
Washington, D. C.—November, 1931
New Hampshire—September, 1931
Illinois—May, 1931
Louisiana—April, 1930



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THIS DEEP-SEA CREATURE CAN HAVE NO SECRETS

Naturally transparent, the *Cystisoma*, a giant glasslike shrimp with huge eyes, may easily be studied by scientists. It was brought up alive from a depth of 800 fathoms (4,800 feet) off Bermuda. Through a new chemical process science can now make even the darkest and most leathery fish transparent.

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New Glacier and Mountains Added to Map by Washburn Expedition

NEW demonstration of the amazing part that airplanes can play in exploring unknown patches of territory has just reached the headquarters of the National Geographic Society in a telegraphic report from Bradford Washburn, young American explorer of Cambridge, Massachusetts, only a few days after arriving at his temporary rail base in Carcross, Yukon Territory, Canada.

Mr. Washburn, on his way to explore for The Society the tangle of mountains in the extreme southwest corner of Yukon Territory, which holds the highest unclimbed peaks of North America, made an immediate reconnaissance from the air, and in a flight lasting less than eight hours discovered an immense unknown glacier nearly 50 miles long. On the same flight he found that famous Hubbard Glacier, thought to be 30 miles long, is more than double that length (see illustration, next page). He also discovered an hitherto unknown range of mountains of the unclimbed peaks of the St. Elias Range.

Visit Indian Settlement

Mr. Washburn's report follows:

"The monoplane of the National Geographic Society, piloted by Everett Wasson, of Carcross, returned here after establishing the base camp of the Expedition near the tongue of an immense unknown glacier descending eastward for nearly 50 miles into the Alsek Valley from the peak of Mt. Hubbard, one of the greatest

"Andrew Taylor, in charge of base camp freighting operations, accompanied Wasson on the flight, during which the plane also visited an Indian settlement at the south end of Kluane Lake to procure two dog teams to assist our men in moving a series of camps up the glacier. From the head of this glacier we hope to map a large portion of the unknown region east of Mt. St. Elias.

"The glacier on which the camp has been located lies some 130 miles west of Carcross and was discovered on a flight made by Wasson, Taylor, Dr. Frank Henderson, eminent geologist of Vancouver, and myself. Leaving Carcross shortly after eight a. m., in cloudless weather with the temperature just above zero, we flew for a total of seven hours and forty-five minutes, studying 1,000 square miles of mountainous country in this unmapped area of the Yukon.

Mt. Vancouver Appears To Be Unclimbable

"Besides the discovery of the huge glacier system on the east and north slopes of Mt. Hubbard, we were amazed to find that the Hubbard Glacier, formerly believed to be less than 30 miles in length and thought to end at the divide between Mt. Hubbard and Mt. Vancouver, actually flows fully 40 miles farther into the very heart of the St. Elias Range. It grows broader rather than narrower, and finally ends 60 or 70 miles from Yakutat Bay at the very base of Mt. Logan.

"Mt. Vancouver appears to be utterly impregnable. It is one of the most amazing mountain masses that I have ever seen, rising to an altitude of nearly 16,000 feet from the flat snow fields of the Hubbard Glacier in one gigantic cliff of ice and rock without a single climbable angle.

"Between Mt. Hubbard and Mt. Lucania stretches a range of hitherto unseen mountains in which there are at least twenty peaks over 10,000 feet in height and

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as proprietors. It is sheer joy to go to a morning market to watch groups of Siamese women bargaining over prices of household commodities.

If Bangkok's business thoroughfares seem too narrow and congested, the same cannot be said of her outlying residential roads, for they are wide avenues of asphalt or crushed rock, bordered with delightful canals. "Flame of the forest" trees, ablaze with red blossoms from April to June, or majestic rain trees canopied overhead, form stately Gothic arches for mile after mile.

Note: For other references to Siam, including natural color photographs of Bangkok and the hill tribes, see: "Land of the Free in Asia," *National Geographic Magazine*, May, 1934; "Flying the World," June, 1932; "By Seaplane to Six Continents," September, 1928; "The Warfare of the Jungle Folk," February, 1928; "The Geography of Money," December, 1927; "Map-Changing Medicine," September, 1922; "Hunting the Chaulmoogra Tree," March, 1922; and "From London to Australia by Aeroplane," March, 1921.

See also in the *GEOGRAPHIC NEWS BULLETINS*: "Siam, an Air-Conscious Oriental Kingdom," week of November 19, 1934.

Bulletin No. 3, March 25, 1935.



Photograph by Edward Burton McDowell

THE BUTCHER'S WAGON IS A BOAT IN BANGKOK

Because the Siamese capital is built on both sides of a busy river and is interlaced with canals, it is sometimes easier to make deliveries on water than on land. This Chinese meat vender weighs his pound of flesh as a customer watches alongside.

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London's Exhibition Halls Mirror English Trade

WORLD buyers of industrial products, textiles, furniture, and novelties recently flocked to London to visit the annual British Industries Fair held at Olympia and White City.

East meets West in these great exhibition halls, for buyers come from countries as widely separated as Peru and China, Canada and Syria, France and Australia, to window-shop and place orders. They are guided through two miles of stands by a corps of interpreters, and the catalogue is printed in nine languages.

The commercial London, which few tourists ever see, boasts many fine exhibition halls. The best known is Olympia, while a short distance away are the White City and Earl's Court. They form a little city of spectacular show places not far from London's aristocratic "West End."

Six Acres under Glass

Olympia, a huge, glass-roofed building covering six acres, is the scene of two outstanding events of the spring London season—the Royal Military Tournament and the Horse Show. Here is a partial list of exhibitions to be held there this year: furniture trades, ideal homes, terrier club, confectionery, radio, shipping, engineering, and automobile exhibitions, the Royal Horticultural Society's Flower Show, and a circus and fair.

In nearby White City are held, under floodlights, rugby football games, greyhound racing, and athletic contests, besides many exhibitions. The huge Earl's Court Exhibition hall is now closed.

Drab Islington, one of the most populous suburbs of northern London, houses Royal Agricultural Hall, built in 1861. Cattle, horse, dog, used-car, shoe and leather, brewers, and public works shows spread exhibits over its three acres of space, while at Christmas, there is fun and laughter at the circus and World's Fair.

Wembley Recalls Britain's "Century of Progress"

In northwest London, a little station called Wembley Park conjures up ghosts of a great exhibition. Here, in 1924 and 1925, was held the British Empire Exhibition. Called "Wembley" for short, it was to London what "A Century of Progress" was to Chicago, but all that remains to-day of its halls, oriental temples, artificial lakes, fountains and walks is the Empire Stadium. This huge bowl is half as large again as the Colosseum at Rome, and seats 100,000 spectators.

When the Empire Stadium is filled for England's great annual soccer game—the Cup Final—the onlooker is treated to a thrilling sight. The King and the Prince of Wales present cups and medals to the players, bands play stirring tunes, thousands of voices join in community singing, airplanes zoom overhead, and England becomes as wildly excited as the United States does for the World Series.

Before the World War, the Cup Final was played in the grounds of the Crystal Palace, the most imposing and romantic Exhibition Hall in London. It is a mammoth, drafty edifice of glass and iron, 1,608 feet long, consisting of a great central hall with aisles and two transepts. At either end is a water tower 282 feet high.

The Crystal Palace was originally built in Hyde Park for the Great Exhibition of 1851, but three years later it was moved to its present site on a hill at Upper Norwood, dominating southeast London. During the war it was used for training the Royal Naval Division and was nicknamed "H.M.S. Crystal Palace."

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several even higher. Mt. Lucania lies so far north of the region of our projected mapping and exploration that we did not visit it on this flight; but we plan to return with our mapping cameras soon and cover the whole area with as complete a network of oblique photographs as possible.

"Before returning to Carcross we made several photographs of Mt. Hubbard and the glaciers east of it, on one of which our base is now established. These pictures were developed and are being used now to formulate our future plans of exploration of this magnificent mountain country, which is probably the last utterly unexplored region in North America.

"Our men are engaged in preparing more loads for the airplane to carry to our base. As soon as conditions permit we will have a party of six men, 4,000 pounds of supplies, eight dogs and a dog driver to transport to the mountains.

"With perfect weather, the job could be completed in two days. The town of Carcross is doing everything in its power to make us comfortable and to speed our work, and the pilots of Northern Airways are not only wonderful companions but superb flyers operating under the most adverse conditions.

"After the base is established on the glacier at an altitude of about 3,000 feet, we will advance camp as rapidly as possible to the divide at its head, 10,000 feet high and 40 miles away, from which the major part of our mapping and photographic work will be done during the months of April and May.

"Our pilot will return in mid-April to bring in mail and to be assured of our safety. A dog team will descend the glacier to meet him at that time. After the ice has broken up late in May we hope to mush out to Bates Lake some 30 miles from the foot of our glacier, there to await the airplane which will bring us back to civilization as soon as flying on pontoons is possible."

Note: For supplementary reading and photographs of the region being explored by the Washburn Expedition see "The Conquest of Mount Crillon," *National Geographic Magazine*, March, 1935; "To-day on 'The Yukon Trail of 1898,'" July, 1930; "Gentlemen Adventurers of the Air," November, 1929; "The First Alaskan Air Expedition," May, 1922; and "The Conquest of Mt. Logan," June, 1926.

See also in the *GEOGRAPHIC NEWS BULLETINS*: "Expedition to Map and Explore Unknown Yukon," week of March 4, 1935.

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Photograph by H. C. Fassett, courtesy of U. S. Fish Commission

HUBBARD GLACIER'S LENGTH HAS JUST BEEN DOUBLED

Until the Washburn Expedition studied it from the air recently, this great river of ice was believed to be 30 miles long. Now its source is estimated to be some 60 or 70 miles from the ice-face shown above. The glacier was named in honor of Gardiner Greene Hubbard, first President of the National Geographic Society.

The Crystal Palace is used for flower, dog, and poultry shows. Radio research is carried on in one of its flanking towers. The 200 acres of grounds are a quaint mixture of ancient and modern with tennis courts, walks, old classical statuary, row boats, and life-size models of prehistoric animals in their geological formations. The triennial Handel Festivals, reminding American visitors of the famous Bach festivals at Bethlehem, Pennsylvania, are held in the Handel Orchestra auditorium, which can accommodate 4,000 persons.

The English love exhibitions, finding in the shows a faithful mirror of their manners, modes, customs, and habits. The Great Exhibition, however, was a little too much for Charles Dickens, for he wrote to a friend on July 11, 1851: "I find I am 'used up' by the Exhibition. I don't say 'there is nothing in it'—there's too much. I've only been twice; so many things bewildered me. . . . It is a dreadful thing to be obliged to be false, but when anyone says 'Have you seen ——?' I say, 'Yes' because if I don't, I know he'll explain it, and I can't bear that."

Note: Students preparing projects or units of work about London and the British Isles should also consult: "Vagabonding in England," *National Geographic Magazine*, March, 1934; "Some Forgotten Corners of London," February, 1932; "Highlights of London Town," May, 1929; "London from a Bus Top," May, 1926; "From England to India by Automobile," August, 1925; "Looking Down on Europe," March, 1925; "Cathedrals of the Old and New World," July, 1922; and "Through the Heart of England in a Canoe," May, 1922.

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A GIANT "HOTHOUSE" THAT NURTURES ENGLISH TRADE

The Crystal Palace, perhaps the most noted of London's many exhibition halls, is a mighty monument of glass and iron designed by Sir J. Paxton on the plan of a large conservatory. It has been the scene of countless trade fairs, festivals, and concerts.

